

1.0 PROJECT PROPOSAL SUMMARY SHEET

PROJECT NAME: North Dakota Stockmen's Association - Environmental Services Program Phase IV
NAME, ADDRESS, PHONE & E-MAIL OF LEAD PROJECT SPONSOR/SUBGRANTEE:

North Dakota Stockmen's Association
407 South 2nd Street
Bismarck, ND 58504

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STATE: North Dakota

WATERSHED: Statewide

PROJECT TYPE: Statewide financial and technical assistance for animal waste systems

WATERBODY TYPES: Lakes/Reservoirs, Rivers/Streams/Wetlands

NPS CATEGORY: Agriculture

PROJECT LOCATION: Statewide

SUMMARIZATION OF MAJOR GOALS:

Beef cattle represent the largest livestock industry in North Dakota, with more than 9,900 producers owning 1.7 million head of cattle. Cattle feeding is not a large segment of the beef industry in North Dakota but the interest in cattle feeding is expanding and the potential for growth is encouraging. The Environmental Services Director has close ties with the Feeder Council, which is comprised of a large percentage of cattle feeders in the state, and provides a great contact for the director.

This is a continuation of Phase IV of the successful North Dakota Stockmen's Association (NDSA) Environmental Services Program (ESP). These funds are directed to BMP's. The major goal is to maintain a statewide program that will reduce potential water quality impairments associated with livestock concentration areas by increasing producer understanding of the current state and federal rules and regulations and assisting them with the identification and implementation of cost-effective solutions that will improve manure management. Beef producers will voluntarily incorporate management techniques, improve facilities and increase the utilization of manure as a valuable resource.

PROJECT DESCRIPTION:

The Environmental Services Director will assist 100 beef producers in several areas.

1. Identify financial needs of producers that are necessary for Best Management Practices (BMP) and compliance measures.
2. Assist producers in developing and identifying BMP's to improve their feeding operation to reduce possible environmental hazards.
3. Encourage voluntary participation in BMP's.
4. Assist producers with the evaluation of current manure management practices and alternative management measures for their facilities. Make referrals to engineers, experts, etc.
5. Assist in filing the necessary documentation for planned facilities to obtain approval from the North Dakota Department of Health.
6. Assist in identifying potential problems with an existing facility and recommending solutions or people who can assist in resolving their problems.
7. Identify potential sources of cost-share dollars to match 319 funds and other funds available that will lighten producers' financial burden to the producers.
8. Document the benefits of applied BMP's and project efforts.

FY 2017 319 funds requested: \$600,000

non-federal match: \$400,000

TOTAL PROJECT BUDGET: \$1,000,000

2.0 STATEMENT OF NEED

The ESP was started in 2001, has been implemented through several phases. Since the initiation of the current phase the NDSA has been one of the leaders in promoting BMP's while addressing livestock waste runoff on animal feeding operations (AFO's). The NDSA Environmental Services Director has been invited on 48 beef cattle operations across the state to assess individual AFO's and to determine how that operation's fit into the state and federal regulations for AFO's. There have been 27 Stewardship Support Program (**See attachment 5**) contracts developed for cost-share on the installation of animal waste systems. Through the work of the NDSA ESP, more than 31,143 head of beef cattle are now being fed in a permitted facility. These permitted feedlots have reduced annual of nutrient loading by 82% based on the Animal Feedlot Runoff Risk Index Worksheet (AFRIW).

The ESP has been successful in locating outside money to help defray some of the out-of-pocket costs for the producers. North Dakota Legislature allocated \$50,000 per biennium to support project staff in 2007, 2009, 2011, 2013, and 2015. In addition, a \$50,000 grant from the North Dakota Water Commission in 2007, 2009, 2011, 2013 and 2015 was committed for producer engineering expenses as well. The annual NDSA Feedlot Tour continues to allow interested beef cattle producers the opportunity to see first-hand what conservation practices are involved in a permitted beef feedlot. The tour recently finished its 14th year with more than 150 interested cattle producers attending.

The need and interest for permitted, contained animal waste systems continues to be high from beef cattle producers in North Dakota. Primarily, the project will address nutrients such as nitrogen, phosphorus and *E. coli* bacteria. The project plans to reduce annual concentration of nitrogen and phosphorus as well as the nutrient loading by 82% per system installed by the NDSA ESP. With 200 lakes and reservoirs and 56,027 miles of rivers and streams in North Dakota, the need for this project to address water quality is great importance. Severe water quality impacts are associated with poor manure management. With 4,194 miles of rivers and streams affected by animal feeding operations there remains a need to address the lack of manure management. With construction of clay-lined holding ponds, beef cattle producers today are implementing containment animal waste systems and preventing excess runoff of nitrogen, phosphorus and *E. coli* bacteria. The project benefits are two-fold; the beef producer and the environment both win when a needed animal waste system is constructed and properly maintained. The current state and federal animal feeding regulations continue to drive the interest from beef cattle producers.

One of the greatest successes has been the opportunity to provide information on the AFO-CAFO regulations to interested producers all across the state and country. The Environmental Services Director has made more than 15 presentations across the state and country, in addition to the monthly column in the *North Dakota Stockman* magazine.

3.0 PROJECT DESCRIPTION

Most of the program focus will be one-on-one producer contact. The NDSA Board of Directors has established a process to schedule the delivery of technical and financial assistance. (**See attachments 2 and 3**) This process will be used to prioritize the delivery of technical and financial assistance to producers outside of approved EPA 319 watershed priority areas. The criteria will focus on those beef cattle operations that may be viewed a contributing more to an environmental problem based on location and size up to 1,000 animals. The actual site will be viewed by the Environmental Services Director and the producers to make a preliminary evaluation of potential problems and compile potential solutions.

Rancher-to-rancher links can be established to demonstrate that solutions are available. A concerted effort will be made to accomplish a practice in a least-cost fashion. The ESP has utilized the AFRRIW to estimate annual nitrogen and phosphorus loadings. The worksheet was modeled after the State of Utah's worksheet. (See attachment 4)

3.1 PROJECT COMPONENTS

Goal: Maintain a statewide program that will reduce potential water quality impairments associated with livestock concentration areas by increasing producer understanding of the current rules and regulations and assisting them with the identification and implementation of cost-effective solutions that will improve manure management. Producers will voluntarily incorporate management techniques, improve facilities and increase utilization of manure as a valuable resource.

Objective 1: Increase producer awareness and understanding of current/pending rules and regulations addressing manure management, as well as potential solutions to water quality impacts associated with their livestock facilities.

Task 1. Employ an Environmental Services Director to deliver the program and complete project tasks.

Product: Environmental Services Director

Cost: This cost includes salary, fringe, travel, supplies, rent, utilities, telephone, postage, equipment and is included in a previous grant allotment.

Task 2. Disseminate information on the compliance requirements and potential penalties associated with current or pending rules and regulations focusing on manure management in the state.

Product: Direct mailings, 25 contacts/year, 11 articles/year, 5 public presentations/year and 1 feedlot tour/year.

Cost: Included in Task 1.

Task 3. Assist producers with evaluations and assessments of their facilities to identify potential water quality concerns and the type of BMP's that could be implemented to improve their current feeding operations and downstream water quality.

Product: 25 animal feeding operation evaluations and ranch assessments and North Dakota animal feedlot runoff risk index worksheet per year. (See attachment 2, 3, and 4)

Cost: Included in Task 1.

Task 4. Promote the voluntary implementation of BMP's designed to improve manure management within concentrated livestock feeding areas.

Product: 25 one-on-one contacts per year. Site-specific BMP recommendations based on the ranch assessments.

Cost: Included in Task 1.

Task 5. Provide cooperating producers with preliminary cost estimates for recommended BMP and potential sources for financial assistance.

Product: List of private/local/state/federal funding sources for manure management systems and three site-specific cost estimates per year.

Cost: Included in Task 1.

Objective 2: Provide financial and technical assistance to support the voluntary installation of 15 manure management systems.

Task 6. The NDSA Board of Directors to utilize a prioritization process for the delivery of financial and technical assistance for the installation of manure management systems. It will be consistent with the statewide prioritization process.

Product: Identify 5 priority AFO's per year (See attachment 2, and 3)

Cost: Included in Task 1.

Task 7. Provide technical assistance for the development of manure management plans for priority facilities and the acquisition of the engineering assistance to complete construction designs. Potential sources for engineering assistance include NRCS, Nonpoint Source Best Management Team, or private consultants.

Product: Five system designs per year.

Cost: Included in Task 1. (If applicable, private consultant engineering costs will be included in the system implementation costs.)

Task 8. Provide Section 319 financial assistance available through the NDSA Stewardship Support Program (SSP) and/or assist the producer in applying for other state/federal funds to install the priority manure management systems.

Product: 3 funded through SSP,

Cost: \$1,000,000 (\$600,000 in FY 2017 section 319 funds and \$400,000 in match)

Task 9. Complete annual project reports according to the Environmental Protection Agency and North Dakota Department of Health requirements and final report at the end of the project.

Product: Two annual reports and one final report

Cost: Included in Task 1.

3.2 PROJECT SPONSOR

The NDSA will be the lead project sponsor. North Dakota Department of Health (NDDH) staff has expressed a need for a front-end salesperson. The Environmental Services Director would have credibility with producers because the association is viewed as non-regulatory. The Environmental Services Director will be rancher-friendly and can direct producers to the right people by giving information, contact people and advice to producers who will not initially contact government agencies directly. We will depend on Extension for educational information and the State Health Department for regulatory information. NRCS, soil conservation districts, water resource districts, 319 engineering teams and private engineers will be called on for technical advice when appropriate. A network of producers and feeders with experience in various areas of expertise will also be utilized to increase the comfort level for producers needing to implement various environmental practices.

3.3 MILESTONE TABLE (See attachment 1)

3.4 PERMITS

Specific inventory and ND Pollutant Discharge Elimination System and Approval to Operate permit requirements will be determined on a case-by-case basis. Operation and maintenance plans will be developed by the engineer for the livestock management systems during the design phase.

4.0 COORDINATION PLAN

The Environmental Services Director will coordinate with others to prevent duplication. In most cases, we see the position as being the first contact (a friendly face) for producers who would not feel comfortable approaching others with regulatory authority. Communicating ideas, needs and producer concerns to others will create an opportunity to find solutions as a group.

The NDSA Environmental Services Director will work closely with the North Dakota State University (NDSU) Nutrient Management Advisory Committee. The NDSA Environmental Services Director is part of the advisory committee to give direction and coordinate efforts. The committee is made up of the following organizations: U.S. Department of Agriculture Natural Resources and Conservation Services (NRCS), North Dakota Department of Health, North Dakota Stockmen's Association, North Dakota Department of Agriculture (NDDA), North Dakota Pork Producers Association, North Dakota Lamb and Wool Producers Association, NDSU Extension Service, NDSU Animal Science Department, NDSU Soil Science Department. This committee is expected to meet twice a year to, 1) provide overall program direction to the NDSU Extension livestock environmental management program, 2) identify additional research needs in this area, and 3) provide a conduit for effective communications and coordination among livestock groups and agencies working with livestock environmental management.

There will be involvement from various agencies and organizations to deliver the program. The NRCS will provide financial assistance through EQIP when appropriate. The NDDH will provide financial assistance to the NDSA through Section 319 funds. Local Section 319 dollars in prioritized watershed will be used when appropriate. The section 319 funded NPS BMP Team will provide engineering support to the ESP for facilities being planned throughout the state.

4.1 LOCAL SUPPORT

The NDDH, North Dakota State Legislature, North Dakota Governor, NDSU Extension Service, NRCS, North Dakota Ag Department, soil conservation districts and producers have all expressed an interest in this position. The NDSA has secured \$50,000 of state funds in each of the 2007, 2009, 2011, 2013 and 2015 legislative sessions. The encouragement and feedback from legislators is a positive sign for the project.

The proactive approach taken by the NDSA has led to many positive comments from producers requesting assistance. The producer feedback mainly focuses around the fact that producers trust and appreciate the NDSA'S help on this sensitive issue from.

There are numerous producer comments appreciating the confidentiality of the assistance provided from the NDSA. In addition, the producers have commended the organization for being the only non-governmental, non-regulatory organization providing professional consultation on livestock waste issues.

4.2 LETTERS OF SUPPORT

Letters can be secured if necessary.

4.3 COORDINATION

- NDSU Nutrient Management Specialists – The NDSA Environmental Services Director works closely with them on follow-up with beef producers who have implemented animal containment systems.

- NRCS – The NDSA Environmental Services Director works with the district conservationist when beef producers are interested in constructing animal containment systems through EQIP. The NDSA takes the lead on implementation of the project.
- NDDA - The NDSA Environmental Services Director works with the livestock pollution prevention program coordinator in identifying beef cattle operations that need to come into compliance. Duplication and/or completion is prevented between the two programs.
- Non-point source best management practice team, soil conservation district and local non-point source watershed projects - The NDSA Environmental Services Director works with these groups and agencies in identifying operations that are requesting engineering and financial cost share assistance.

5.0 EVALUATION PLAN

Evaluations, surveys and statistics of contacts, projects and results will be compiled. The more producer contacts and referrals made will be a strong indication of success through acceptance of the program. As producers visit with each other and word of the benefits of contacting the NDSA travels, we will be able to inform more producers of the benefits of a properly managed waste system. We will also be able to evaluate systems and compile statistics on facilities that are in compliance, but may not necessarily be permitted. A list of specific activities is included in objectives 1 and 2.

In addition, each permitted facility will be evaluated before and after with the aid of the AFRIW (**see attachment 4**). This worksheet will be used to estimate annual nitrogen and phosphorus load reductions for each manure management system. The information needed from each operation is as follows: lot description, lot size, surface type, animal type, number of animals, average weight, and days confined. In addition, the specific feedlot features needed for input are distance to water, percent slope in pen, type of vegetation outside the pens and whether the feeding operation has a clean water diversion.

The understanding is that the information collected through the project will be used to assist producers with personal decisions related to manure management. This information will be maintained by the Environmental Services Director. If there are requests for this information, approval will need to be obtained from the project sponsors and the appropriate producer(s) before it can be provided to the parties requesting the information.

6.0 BUDGET

The budget is detailed in the two budget tables. Part 1 details funding source by year. Part 2 is a more detailed line-item budget.

PROJECT IMPLEMENTATION PLAN BUDGET

Part 1 Budget: Funding Sources

Funding Source	Jul-17	State Fiscal Year Budgets		TOTAL
		2018	2019	
EPA Funding				
FY 2017 EPA Requested Funds	\$200,000	\$200,000	\$200,000	\$600,000
State/Local Match				
State Funding (ERP)				
NDSA Inkind Match	\$53,333	\$53,333	\$53,333	\$160,000
Producer Contribution	\$80,000	\$80,000	\$80,000	\$240,000
Subtotal	\$133,333	\$133,333	\$133,333	\$400,000
Total	\$333,333	\$333,333	\$333,333	\$1,000,000

Part 2 Budget: Estimated Annual Section 319 & Local Match Expenditures

Cost Category	State Fiscal Year Budgets			TOTAL	Cash/Inkind Match	319 Funding
	Jul-17	2018	2019			
Salary (1FTE)						
Fringe						
Travel						
Supplies						
Rent/Utilities						
Telephone/Postage						
Equipment						
BMP	\$333,333	\$333,333	\$333,334	\$1,000,000	\$600,000	\$400,000
Other						
Administrative						
Total	\$333,333	\$333,333	\$333,334	\$1,000,000	\$600,000	\$400,000

North Dakota Stockmen's Association

	SFY 2017				SFY 2018				SFY 2019				Planned Outputs	
Task 1: Employ Staff Person					X	X	X	X	X	X	X	X	One staff person	
Task 2: Distribute Information			X	X	X	X	X	X	X	X	X	X	Direct mailings, 25 contacts per year, 11 articles/year 5 public presentations/year, 1 feedlot tour per year	
Task 3: Assist with assessments			X	X	X	X	X	X	X	X	X	X	Conduct 25 animal feeding operations and ranch assessments per year	
Task 4: Promote implementation			X	X	X	X	X	X	X	X	X	X	25 one on one contacts per year, including site specific BMP recommendations	
Task 5: Provide Cost estimates			X	X	X	X	X	X	X	X	X	X	3 site-specific cost estimates per year	
Task 6: Prioritization Process			X	X	X	X	X	X	X	X	X	X	Identify 5 priority animal feeding operations per year	
Task 7: Technical assistance for management plans			X	X	X	X	X	X	X	X	X	X	Design 5 systems per year	
Task 8: Provide financial assistance			X	X	X	X	X	X	X	X	X	X	3 systems installed through the NDSA SSP	
Task 9: Annual reports				X				X				X	Complete 3 annual reports and 1 final report	

Attachment 2

North Dakota Stockmen's Association Environmental Services Livestock Feeding Assessment

For each issue listed in the left column, read across to the right, determine the appropriate risk factor and place that number (1-10) in the far right column. Next, add the numbers in that column and then refer to the table below to determine your relative environmental risk

Assessment Categories	Risk Factor							Your Risk Factor	
	Lower 1	3	5	7	9	10	Higher 10		
What is the animal unit capacity of the animal feeding operation?	<50	50-99	100-299	300-499	500-699	>700			
What is the pen slope in percent?	<1	1-1.9	2-2.9	3-3.9	4-4.9	>5			
What is the slope from the pen to the nearest protected surface water body* in feet?	<1	1-1.9	2-2.9	3-3.9	4-4.9	>5			
What is the distance from the pens to the nearest protected surface water body* in feet?	>4,000	2,000-3,999	1,000-1,999	500-999	250-499	<250			
How many months each year will the facility contain animals?	0-2	3-4	5-6	7-8	9-10	11-12			
What kind of soil is between the pens and the nearest protected surface water body*?	Sand	Sandy loam	Silt loam	Silty clay loam	Clay loam	Clay			
What kind of vegetative cover grows in the buffer area below the pens?	Tall, dense grass cover	Short or thin grass	Cropland >50% residue	Cropland 30-50% residue	Cropland 10-30% residue	No crop <10% residue			
How does the size of the buffer area below the feedlot pen compare to the size of the feedlot?	6x	5x	4x	3x	2x	1x			
How much extraneous drainage (other areas that drain through the lot) exists compared to the size of the pens?	1x	2x	3x	4x	5x	>6x			
What is the average annual rainfall in inches?	<20	20-24	25-29	30-35	36-40	>40			
What is the maximum 25-year, 24 hour rainfall in inches?	<4	4	5	6	7	>7			
To obtain total risk factor, add all of the above risk factors									

* Creek, pond or lake

Score	Potential Environmental Risk
20 or less	Feedlot operation poses minimal pollution risk.
21-40	Some changes in feedlot management may be necessary to reduce pollution risk.
41-60	Operation may have acceptable pollution risk, however, any change in site size or management may result in a significant, additional pollution risk.
61 or greater	Feedlot operation is likely to be a significant pollution risk.

Attachment 3

**ND Stockmen's Association Farm/Ranch Inventory
Animal Waste System**

Date: _____

Name of Farm/Ranch: _____

Name of Farmer/Rancher _____

Address: _____

Township: _____ Range _____ 1/4 of _____

Phone Number(s): _____

General Information

Livestock Type: _____

Breed(s): _____

No. Of Mature Animals: _____

Average weight: _____

No. of Animals 0-3 months: _____

Average weight: _____

No. of Animals 4-6 months: _____

Average weight: _____

No. of Animals 7-24 months: _____

Average weight: _____

No. of replacements/feeders purchased/yr: _____

Average weight: _____

Numbers & other types of livestock: _____

Has the number of animals in your herd changed by more than 10% in the last year?

_____ increased _____ decreased _____ stayed about the same

If herd size changed, please explain: _____

Do you have any plans to change size of operation in the future? _____ yes _____ no

Explain possible expansion or downsizing plans, if any: _____

How many months of the year is feedlot used? _____ months

Do you pasture your livestock? _____ yes _____ no If yes, how many months of the year? _____ months

Land Base

Total acres owned: _____

rotated cropland _____

continuous cropland _____

permanent hay _____

pasture/rangeland _____

woodland _____

other _____

Total acres rented: _____

rotated cropland _____

continuous cropland _____

permanent hay _____

pasture/rangeland _____

woodland _____

other _____

Do you have a gravel source(pit) on your property? ____yes ____no

List the types of crops/forage grown: _____

Soil Testing ____yes ____no

Equipment

Manure spreader(rear, side discharge, slurry tank) _____

Capacity _____

Earth moving equipment (scraper, backhoe, trucks, etc.) note size _____

Feeding System

Where are the forages stored? (list dimensions of all that apply)

bags _____

gas-tight upright silos _____

bunk or pit silos _____

conventional upright silos _____

hay barn _____

other (please specify) _____

Do you feed potato waste, beet tailings or corn silage? ____yes ____no

Is waste water from these feeds contained or refeed? ____yes ____no

Water Supply

What is your livestock water source? ☐ well ☐ cistern ☐ pond ☐ stream
☐ rural water ☐ spring ☐ municipal supply
☐ multiple sources (please specify): _____

How deep is your well? _____ feet

Is the house water source separate from the livestock source? ☐ yes ☐ no explain: _____

If other than municipal water, is any treatment method used? ☐ yes ☐ no If yes, explain: _____

Has your water been analyzed for any of the following?

<input type="checkbox"/> Salinity	<input type="checkbox"/> Coliform bacteria	<input type="checkbox"/> Pesticide residues
<input type="checkbox"/> Chlorine	<input type="checkbox"/> Nitrates & phosphates	<input type="checkbox"/> Heavy metals
<input type="checkbox"/> Not analyzed		

If water has been analyzed, how recently? _____

How far is your water source from your household septic system? _____ feet
☐ Don't know ☐ Don't have septic tank ☐ Have municipal sewage system

Is your water source uphill from this area? ☐ yes ☐ no

How far is your water source from your concentrated livestock areas? _____ feet ☐ don't know

Is your water source uphill from these areas? ☐ yes ☐ no

How far is your water source from your manure storage areas? _____ feet

Is your water source uphill from these areas? ☐ yes ☐ no

Manure Handling

Method of Manure Handling: Daily Spreading _____ Storage _____

Temporary Storage's _____ Composting _____

Is runoff from manure piles contained? ☐ yes ☐ no

How long is manure stockpiled for? _____ months _____ years

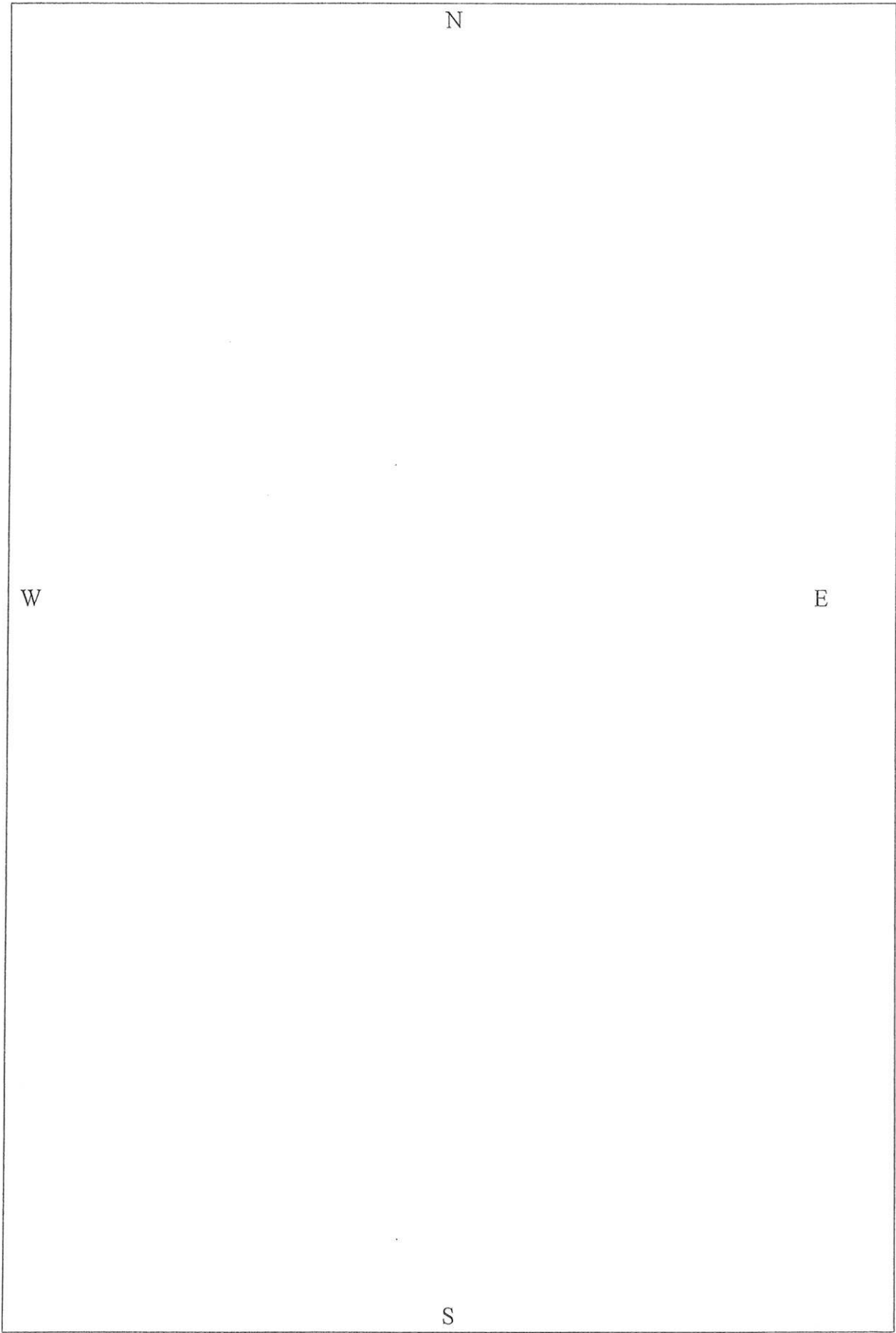
Is stockpiled manure routinely mixed? ☐ yes ☐ no

Type of Handling System: Liquid _____ Non liquid _____

Type of Storage Facility: Lagoon _____ Concrete pad _____ Roofed Structure _____
Concrete structure _____ Other (describe) _____

Percentage applied to: Corn _____ Hay _____ Small Grains _____ Pasture _____
Other crops _____

Farm/Ranch Headquarters Site



***North Dakota Animal Feedlot Runoff Risk Index Worksheet**

Attachment 4

Landowner:

Location:

Planner:

Date:

Weather Station:

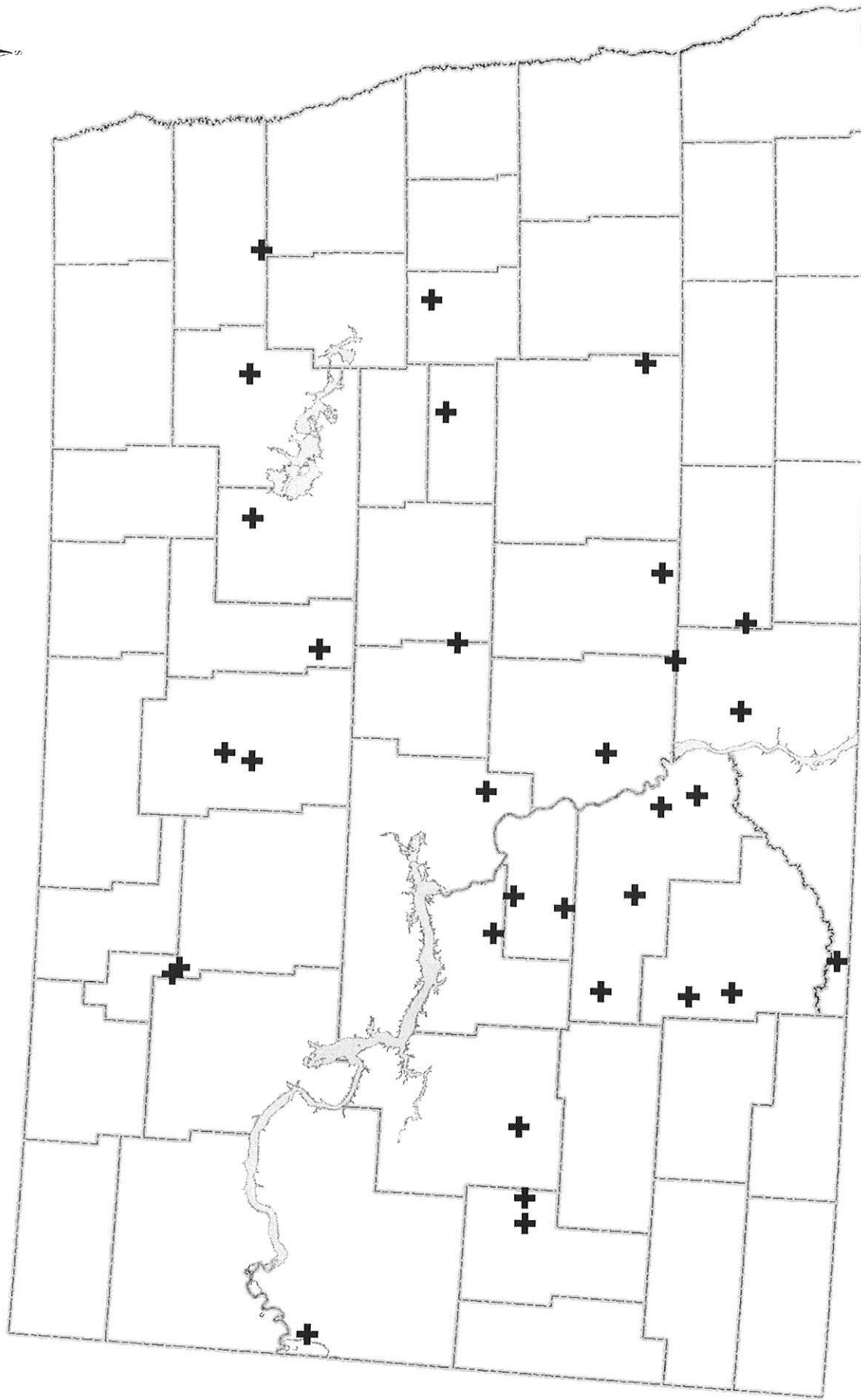
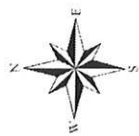
HUC:


Precipitation:


Lot Description:				
Planning Scenario:	Before	After	Before	After
Lot Size (Sq. Ft.):				
Surface Type:				
Animal Type:				
No. of Animals:				
Avg. Weight:				
Days Confined:				
Sq.Ft./Animal:				
Feedlot Features				
Runoff Containment				
Distance to Water				
% Slope				
Vegetation				
Clean H₂O Diversion				
Index and Risk Level				
Index:				
Risk Level:				
Manure Management and Conservation Practices				
Haul/Scrape Frequency				
Practices to be implemented				
Loading Calculations				
Fresh Manure (tons)				
Total N Available (lbs)				
Total P Available (lbs)				
Total BOD₅ Available (lbs)				
Precipitation Factor				
Lot Surface Factor				
Risk Factor				
Total N Loading (lbs)				
Total P Loading (lbs)				
Total BOD₅ Loading (lbs)				

*Modified from Utah to fit North Dakota. Individual high risk features should be evaluated and conservation practices applied where possible. All runoff from a 25-year, 24-hour storm event must be contained on the lot.

Attachment 5



 Stockmen's Association Manure Management Systems
 January 2007 - September 2016

 County Boundaries